



1-5
7-8
14-19

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Alireza Rezaie, et al.

Serial No.: 08/259,321

Group Art Unit: 1806

Filed: June 10, 1994

Examiner: P. Hutzell

Handwritten notes and signatures, including "10/3/95" and "10/3/95".

For: CALCIUM BINDING RECOMBINANT ANTIBODY AGAINST PROTEIN C

Commissioner of Patents
and Trademarks
Washington, D.C. 20231

**RESPONSE TO RESTRICTION REQUIREMENT AND
INFORMATION DISCLOSURE STATEMENT**

Responsive to the Office Action mailed April 7, 1995, applicant hereby submits

1) A Response to Restriction Requirement, 2) an Information Disclosure Statement, including a Form 1449 and the documents cited therein, and 3) a Request For Change Of Address. It is believed that no fee is due at this time. However, if it is deemed that an extension of time or a fee connected with the enclosed Information Disclosure Statement is required, the Office is authorized to charge the appropriate fee to Deposit Account 01-2507.

Please note that all future correspondence should be directed to:

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Response to Restriction Requirement

In the Office Action mailed April 7, 1995, the claims were divided into three groups, Group I, claims 1-5, 7-8 and 14-19, drawn to antibodies and methods of making recombinant antibodies; Group II, claim 6, drawn to an antibody and a cytokine or inducer of cytokine expression and Group III, claims 9-13, drawn to methods of treatment.

Applicants elect Group I, claims 1-5, 7-8 and 14-19, without traverse.

Information Disclosure Statement

Pursuant to the duty of disclosure under 37 C.F.R. § 1.56, applicants cite the following publications, copies of which are enclosed. The publications marked with an asterisk are unavailable at the present time. Copies will be submitted shortly.

U.S. Patent Documents

| <u>Number</u> | <u>Date</u> | <u>Patentee</u> |
|---------------|-------------|-----------------|
| 4,506,009 | 03/19/85 | Lenhoff, et al. |
| 5,147,638 | 09/15/92 | Esmon, et al. |
| 5,202,253 | 04/13/93 | Esmon, et al. |
| 5,298,599 | 03/29/94 | Rezaie, et al. |
| 5,336,610 | 08/09/94 | Esmon, et al. |

Publications

Beckmann, Robert J., et al., "The structure and evolution of a 461 amino acid human protein C precursor and its messenger RNA, based upon the DNA sequence of cloned human liver cDNAs," Nucleic Acids Res. 13(14):5233-5246 (1985)

Colman, R.W., et al., Hemostasis and Thrombosis: Basic Principles and Clinical Practice 2nd Ed., p. 263 (J.B.Lippincott, Philadelphia, PA 1987)*

Daugherty, et al., Nucl. Acids Res., 19:2471-2476 (1991)*

Dreyfus, Marie, et al., "Treatment of Homozygous Protein C Deficiency and Neonatal Purpura Fulminans with a Purified Protein C Concentrate," New England Journal of Medicine 325(22):1565-1568 (1991)

Esmon, Charles T., "The Regulation of Natural Anticoagulant Pathways," Science 235:1348-1352 (1987)

Esmon, Charles T., "the Roles of Protein C and Thrombomodulin in the Regulation of Blood Coagulation," J. of Biol. Chem. 264(9):4743-4746 (1989)

Esmon, C.T., et al., at the Joint IABS/CSL Symposium on Standardization in Blood Fractionation including Coagulation Factors, Melbourne, Australia 1986 (reported in Develop. Biol. Standard., 67:51-57 (S. Karger, Basel, 1987)

Esmon, C.T., et al., at the Joint IABS/CSL Symposium on Standardization in Blood Fractionation including Coagulation Factors, Melbourne, Australia 1986 in Develop. Biol. Standard., 67:75-82 (S. Karger, Basel, 1987)

Freyssinet, J.M., et al., "Inhibition of Human Protein C Activation by Vitamin K-dependent Proteins, Involvement of the γ -Carboxyglutamic Acid Domain in Distinct Interactions with the Human Thrombin-Thrombomodulin Complex and Phospholipids," Thrombosis and Haemostasis 58(1):230 (1987)

Goding, James W., "Purification, Fragmentation and Isotopic Labelling," Monoclonal Antibodies: Principles and Practices 110-113 (Academic Press, Inc.) (1983)

Hendl, Sylvia, et al., "Immunoaffinity purification of protein C with a calcium-dependent monoclonal antibody," Rev. Iberoamer Thromb. Hemostasia 4(1):25-28 (1991)

U.S.S.N. 08/259,321
Filed: June 10, 1994
RESPONSE TO RESTRICTION REQUIREMENT AND
INFORMATION DISCLOSURE STATEMENT

Hongo, Tasuku, et al, Cell 18:559-568, (1979)*

Ikeda, Kyoichi and Johan Stenflo, "A Radioimmunoassay for Protein C," Thrombosis Research 39:297-306 (1985)

Kabat, H.A., *et al.*, Sequences of Proteins of Immunological Interest, 4th Ed. U.S. Dept. Health and Human Services, Bethesda, MD (1987)*

Kisiel, in J. Clin. Invest. 64, 761-769 (1979)*

Kobilka, B.K., et al, "Chimeric α_2 -, β_2 -Adrenergic Receptors: Delineation of Domains Involved in Effector Coupling and Ligand Binding Specificity" Science 240:1310-1316 (1988)*

Laurell, Martin, et al., "Characterization of monoclonal antibodies against human protein C specific for the calcium ion-induced conformation or for the activation peptide region," FEBS Letts. 191(1):75-81 (1985)

Matschiner, et al., Current Advances in Vitamin K Research, pp. 135-140, John W. Suttie, ed. (Elsevier Science Publishing Co., Inc. 1988)*

Max, Edward, et al, J. Biol. Chem. 256:5116-5120 (1981)*

Nakamura, Satoko and Yoichi Sakata, "Immunoaffinity purification of protein C by using conformation-specific monoclonal antibodies to protein C-calcium ion complex," Biochimica et Biophysica Acta 925:85-93 (1987)

Ohlin, Ann-Kristin and Johan Stenflo, "Calcium-dependent Interaction between the Epidermal Growth Factor Precursor-like Region of Human Protein C and a Monoclonal Antibody," J. Biol. Chem. 262:13798-13804 (1988)

Ohlin, A. K., and J. Stenflo, "High Affinity Calcium to Domains of Protein C That are Homologous to the Epidermal Growth Factor," Thrombosis and Haemostasis 58(1):230 (1987)

Riechmann, L., M. Clark, H. Waldmann, G. Winter, "Reshaping human antibodies for therapy," Nature, 332:323-327 (1988)*

Seligsohn, Uri, et al., "Homozygous Protein C Deficiency Manifested by Massive Venous Thrombosis in the Newborn," New England J. of Medicine 310(9):559-562 (1984)

U.S.S.N. 08/259,321

Filed: June 10, 1994

RESPONSE TO RESTRICTION REQUIREMENT AND
INFORMATION DISCLOSURE STATEMENT

Stearns, Deborah, et al., "The Interaction of a Ca^{2+} -dependent Monoclonal Antibody with the Protein C Activation Peptide Region," J. Biol. Chem. 263(2):826-832 (1988)

Sugo, et al., Thromb. Hemost. Abstrs., Brussels, 229 (1987)*

Summers, M.D. and G.E. Smith, "A manual of methods for baculovirus vectors and insect cell culture procedures", Texas Agricultural Experimental Station (1987)*

Suzuki, Kobi, et al., "Monoclonal Antibodies to Human Protein C: Effects on the Biological Activity of Activated Protein C and the Thrombin-Catalyzed Activation of Protein C," J. Biochem. 97:127-138 (1985)

Taylor, F. B., et al., "Protein C Prevents the Coagulopathic and Lethal Effects of *Escherichia coli* Infusion in the Baboon," J. Clin. Invest. 79:918-925 (1987)

Verhoeyen, M., C. Milstein, G. Winter, "Reshaping Human Antibodies: Grafting an Antilysozyme Activity," Science, 239:1534-1536 (1988)*

Vukovich, Thomas, et al., "Replacement therapy for a homozygous protein C deficiency-state using a concentrate of human protein C and S," British J. of Haematology 70:435-440 (1988)

Wakabayashi, et al., J. Biol. Chem. 261, 11097-11105 (1986)*

U.S.S.N. 08/259,321

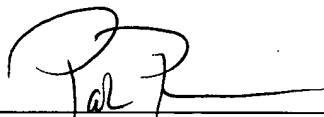
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While this statement is believed to include all of the material presently known to applicants, it should not be interpreted as a representation that an exhaustive search has been conducted or that no better art exists. Moreover, applicants invite the Examiner to make an independent evaluation of the cited art to determine its materiality and relevance to the subject matter of the present application. Applicants are of the opinion that their claims patentably distinguish over the prior art referred to herein, either alone or in combination.

Favorable consideration of claims 1-19 is earnestly solicited.

Respectfully submitted,



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Date: May 8, 1995

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